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| **Representative TN State Curriculum Standards**  **Grade 2**  GLE  GLE 0206.4.1 Recognize, classify, and transform 2- and 3-dimensional geometric figures  Checks for Understanding:  0206.4.2 Reflect, rotate, and translate shapes to explore the effects of transformation  **Grade 3**  GLE  GLE 0306.4.2 Understand and apply the concepts of congruence and symmetry  State Performance Indicators  SPI 0306.4.3 Identify the line of symmetry in a two-dimensional design or shape | |
| http://valariebudayr.typepad.com/.a/6a00e54ef837538833015433ca480c970c-500wi | Time: 15 minutes  (Supplies: tangram set, printout of the animals from book)   * Before reading the story, have the students arrange the tangrams into a square. Explain to them that as the story goes along, we will change the square into the different characters. * Read the first page and have the students turn the square into a fox. The students can use a template or try in on their own. Keep reading and turn the fox into the next character. Keep going. Make sure to give the students enough time to arrange each character. * As an extension:  After reading the story to them, have students create their own animals using the tangram pieces, and they could even create their own story to go along with their tangram animals. * This helps the students understand transitions of shapes. * I got this idea from <http://www.lessonplanspage.com/mathgeometrytangrams34-htm/> |

**Virtual Manipulatives**

Time: 5 minutes

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| Tessellations:  <http://illuminations.nctm.org/ActivityDetail.aspx?ID=202>  Description: This game allows the student to make a tessellation. The pieces won’t fit together if it’s not right. The students can turn the pieces so they can fit together. |
| Symmetry:  <http://www.innovationslearning.co.uk/subjects/maths/activities/year3/symmetry/shape_game.asp>  Description: This activity allows the students to complete a shape to make lines of symmetry. They can check it to see if it is correct. They get to pick a level (beginner, intermediate, and expert). After they get that down they can go on to making their own shape. They also get to pick whether they want vertical symmetry or horizontal symmetry. |

**Activities Time:** 5 Minutes Each/20 Minutes Total

Materials: true or false paper, geo-board, rubber bands, alphabet paper, yellow crayon, blue crayon, mirror, blank pieces of paper,

1. 20.11 True or False pg. 416; 5 Minutes
   1. Topic: Proofs
2. Transitions: 10 minutes
   1. Topic: Transformations
      1. Have the students draw a shape on a blank piece of paper. They will cut it out and then trace it on a another piece of paper. They student will trace the shape as it slides (translation), flips (reflections), and turns (rotations).
3. Alphabet Symmetry: 5 Minutes
   1. Topics: Symmetry
      1. The students will have a page with all the letters of the alphabet on it. First they will go through and color all of the letters with vertical symmetry yellow. Then they will go back through and color all of the letters with horizontal symmetry blue. They will then go back and circle the letters that have vertical and horizontal symmetry. They can use a mirror to help them see this.
4. Geo-Boards; 5 Minutes
   1. Topics: Symmetry
      1. Have students use the geo-boards. They will put a line down the middle with a rubber band. They will make a design on one side of the board. They will then switch with other students in their groups and make the design on the other side. This will show symmetry.
5. 20.19 Pattern Block Rotational Symmetry p.422; 5 minutes
   1. Topic: Rotational Symmetry

Lesson Plan: Tangram Puzzles

<http://illuminations.nctm.org/LessonDetail.aspx?id=L168>

Description: In this lesson, the students use tangram puzzles to help understand slides, flips, and turns. They work with the other students at the tables and have them help. This lesson also helps with mathematical reasoning. They have to come up with a plan as to how to solve the puzzle. Then they have to defend their reasoning.